

Chihuahuan Desert Lab Course for Teachers

School

- New Mexico State University at Carlsbad

Credit

- 3 Education Credits (45 Actual Hours)

Locations of Classes

- Carlsbad High School Science Building
- Carlsbad Caverns National Park
- Guadalupe Mountains National Park
- Additional study sites in the local area

Participants

- The course targets all high school science/math/technology teachers in southeastern New Mexico and the El Paso, Texas area.
- Any interested teacher

Instructor(s)

- Instructors and guest speakers vary from course to course.
- Expect one of the following educators to serve as the course instructor: Kris Baca, Robert Cope, Jerry Cox, Jane Dees, Clay Gates, Barry McDowell, Steve West
- Various guest speakers from the National Park Service
- Various guest speakers from governmental and private land management agencies and research centers

Fee

- Through the year 2001, tuition will be paid by funding through the National Park Foundation, the Toyota USA Foundation and the Carlsbad Foundation.

Class Schedule

- The course will be offered as often as there is a demand.
- All classes will be held during non-school hours for the convenience of teachers taking the course.

Registration

- When a course has been scheduled, course information will be posted in high schools throughout southeastern New Mexico and the El Paso, Texas area.
- Registration will be through the New Mexico State University at Carlsbad.
- If the course is not scheduled and you are interested, please contact the Education Specialist at Carlsbad Caverns. Your name will be added to a list of potential students. When the course is scheduled, you will be contacted.

Syllabus
For Chihuahuan Desert Lab Course for Teachers

The following is the syllabus for the pilot Chihuahuan Desert Lab course for teachers. Days, times, instructors, locations will change from one offering to the next. However, the course content should remain the same.

NEW MEXICO STATE UNIVERSITY – CARLSBAD
WLSC 261 – CHIHUAHUAN DESERT LAB
3 Semester Hours
Monday/ Wednesday 5:00 PM -7:00 PM
Fall Semester, 1999

Instructor
Jane Dees

Course Description

An introduction to the Chihuahuan Desert Lab, one of the National Parks Labs with locations at Carlsbad Caverns National Park, Guadalupe Mountains National Park and computer labs and GIS/GPS located at Carlsbad High School. This course is designed for teacher training in field and lab techniques for four ongoing research projects within the parks. Bridging components for elementary, middle school and special needs students will be included. Field trips required.

Expanded Course Description

This course will familiarize students with the Chihuahuan Desert Lab components. The student will learn the basics of water quality monitoring, prairie dog reintroduction and monitoring, cave swallow studies, land reclamation studies and global positioning instrumentation. In lab, students will learn how to capture and test water samples, how to identify local desert plants and animals, monitoring and banding techniques for cave swallows, and GIS/GPS instrumentation. Field studies will give students a chance to practice field sampling, field observation, and data collection. A variety of assessment techniques will be explored, as well as, modification of materials and techniques to fit the needs of elementary, middle school, and special needs students. There will be four field trips--Living Desert State Park (during regular class time); Pecos River water collection site and Environmental Monitoring Research Center (during regular class time); Rattlesnake Springs, Friday, October 15, 5:00 PM – 8:00 PM; and Guadalupe Mountains National Park, Saturday, October 16, 8:00 AM – 12:00 Noon.

Pre-Requisites/Co-Requisites

Students should have earned a valid New Mexico or Texas teaching certificate, and be currently employed in an accredited New Mexico or Texas public or private school.

Text and Materials

Chihuahuan Desert Lab Manual will be distributed to each student for use in the course and in his or her teaching environment. In addition, handouts will be given out as required. A lab/field journal will be required.

Graduate Outcomes

The successful completion of this course will partially fulfill the following graduate outcomes:

1. Effective communication through reading, writing and listening
2. Problem-solving skills
3. Critical thinking skills
4. Awareness of the sciences
5. Collaborative-working skills

Course Objectives/Student Learner Outcomes

On successful completion of this course, the student will be able to:

- Identify the purpose of the National Parks Labs.
- Identify the purpose of the Chihuahuan Desert Lab.
- Provide the student with fundamental information about prairie dogs to include natural history, distribution, classification, life cycle, disease and transmission and gathering and recording field observations.
- Provide the student with fundamental information about water quality monitoring to include study site observation and description, mapping, sampling techniques, sample testing, quality control and data collection and analysis.
- Provide the student with fundamental information about cave swallows to include taxonomy and identification, sounds, mapping and distribution, food habits and data collection/analysis.
- Provide the student with fundamental information about restoration of the Chihuahuan Desert – Grassland Ecosystem to include habitat assessment, plant identification, plant collection and preservation, soil analysis, correlation of plant survival with soil and microclimatology measurements and data collection/analysis.
- Provide the student with fundamental information about geographical information (GIS) and Global Positioning Systems (GPS).
- Help students identify and create transitional activities from elementary to middle school to high school and modify for special needs students.

Performance Measures and Grading

Students are responsible for procedures and policies contained and addressed in the NMSU-C student handbook and catalog.

Including the final, there will be four shorter examinations based upon the four core project areas of the Chihuahuan Desert Lab. Prior to examinations, students will be given a study sheet or the material will be reviewed in class. Each student will keep a journal that will list all that is encountered both in lab and in the field. Each student will be required to participate in all field studies.

It is the student's responsibility to be present for each examination. **No exam may be made up. Any missed exam will have a score of zero.**

Students will be graded as follows:

A:	90 – 100%
B:	80 - 89%
C:	70 - 79%
D:	60 - 69%
F:	Less than 60%

The final grade will be calculated using the following weighting:

Exam 1	15%
Exam 2	15%
Exam 3	15%
Exam 4	15%
Field Trips	10%
Journal	10%
Final Exam	20%

Attendance Policy

It is critical that the student attends every class. Skills and knowledge acquired in one class are used as a foundation for all subsequent classes. If classes are missed, the student will not be able to perform as well on graded exercises. Attendance will be taken at the start of each class. The instructor is required to report absences to Student Services and Financial Aids offices on Academic Alert Reports.

Students with Disabilities

If you have or believe you have a disability, we encourage you to contact the Special Needs Office at this college at your earliest convenience to self-identify. Once that office is provided with the disability supportive documentation needed, the Special Needs Services Coordinator can then begin to arrange the types of appropriate accommodations that might be required. The Special Needs Office is located within the Learning Assistance Center. You may call 234-9317 to make an appointment.

If you have a condition, which may affect your ability to exit safely from the premises in an emergency during class, you are encouraged to discuss this in confidence with the instructor and/or the Special Needs Coordinator. Also, please direct any such inquiries you might have about the Americans with Disabilities Act to the Special Needs Coordinator at the time of your appointment.

Tentative Course Schedule/Calendar

Week Of	Lecture	Activity/Lab/Field Study
Aug 25 – 28 2 hrs.	Introduction, course organization and schedule. Purpose of National Parks Labs. Overview of Chihuahuan Desert Lab (CDL). Project purposes of four scientific studies of the CDL. Review course syllabus and course requirements. Review CDL Manual as text. Field/Lab notebook.	Pre-Test for course. "Question Storm." "Course Overview."
Aug 30 – Sept 4 4 hrs.	National Park Service. Carlsbad Caverns National Park and Guadalupe National Park overviews and roles in American education. Introduction and practice with GIS and GPS. Imputing GPS data from the Newton to Arc View 3.1 (handouts).	"Create-A-Park." Determining what it takes to create a national park. Class will meet at Carlsbad High School/Science Bldg./Chihuahuan Desert Lab. Lab demonstration and hands-on in both classroom and outdoor setting.
Sept 7 – 12 4 hrs.	Revegetation of Chihuahuan Desert Grassland Ecosystem (handout). Historical land uses. Exam 1.	Plant collection and identification techniques. Seed germination and seedling growth. Monitoring and evaluation of established plant populations.
Sept 13 – 18 4 hrs.	Prairie Dogs: Distribution, classification, Black-tailed prairie dog life cycle, plague transmission, ecology. (Handouts)	Classification Pre-Test, Video and handout: "Food Webs," transparencies.
Sept 20 – 25 4 hrs.	Prairie Dogs: Behavior, field methods, statistics. "The Vanishing Prairie Dog," <u>National Geographic Magazine</u> , prairie dog site selection. Exam 2	"Prairie Dog Checklist," "Behaviors at Captive Site," Living Desert State Park (field trip).

Sept 27 – Oct 2

4 hrs.

Water Quality: Introduction to hydrology. Test procedures in simulation lab. Field sampling equipment and techniques.

Water Labs: Temperature, dissolved Oxygen, pH, electrical conductivity, alkalinity, nitrates.

Oct 4 – 9

4 hrs.

Water Quality: Sample collection, preservation and storage. Analysis of metals and trace elements. Exam 3.

River Collection Site and Carlsbad Environmental Monitoring and Research Center (field trip).

Oct 11 – 16

4 hrs.

Cave Swallows: Overview, taxonomy and identification, use of a dichotomous key, research of history of cave swallow distribution.

"Taxonomy and Identification of the Cave Swallow" (handout).

Oct 15

(5 PM - 8 PM)

3 hrs.

Cave swallow foraging site observation in field. Field observation of revegetation study site. Or observation of cave swallows at nesting site.

Rattlesnake Springs (field trip) (handouts), or Carlsbad Caverns Natural Entrance (field trip).

Oct 16

(8 AM-NOON)

4 hrs.

Prairie Dog Field Study

Guadalupe Mountains National Park Headquarters and travel to prairie dog relocation site (field trip).

Oct 18 – 23

4 hrs.

Exam 4, bridging activities, special need modifications, assessment techniques, and lab/field notebooks due, Final Exam, course evaluation.

Soil sampling

Total Clock Hours – 45